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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/575,293

Filing Date: April 12, 2006

Appellant(s): BOSSIDAN ET AL.

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James E. Lake  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 29 December 2009 appealing from the Office action mailed 4 August 2009.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct. The amendment of 2 November 2009 has been entered.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

Diamond, Arthur S & David Weiss (eds.) Handbook of Imaging Materials, 2nd ed.. New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247 & 254-267.

Diamond, Arthur S & David Weiss (eds.) Handbook of Imaging Materials, 2nd ed.. New York: Marcel-Dekker, Inc. (11/2001) pp. 145-164.

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-14, 16-18, and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The instant claims specify a black liquid toner having a polymer, and carbon black and a plurality of different color pigments, each dispersed in the polymer. The claims further define the liquid toner with respect to an image formed using a black liquid toner exhibits an optical density fading of less than 22.6 % when exposed to a light having a spectrum of from about 270 to about 800 nm for a period of time of about 216 hours. The specification, as filed, fails to disclose this range of optical density and do not disclose it for all "liquid black toner" within the scope of the claims.

The specification as filed discloses a single numeric value of inventive optical density for liquid black toner at 10.3 %, as seen in the table on page 5. In this table, the single inventive black liquid toner is compared against a black liquid toner manufactured by the assignee, which is designated as liquid toner K3.1. This single comparative liquid toner has a light fastness of

22.6 %. A comparison for other properties is also made against an inkjet ink described in a foreign (GB) reference. The specification as filed discloses one inventive and one comparative optical density fading for liquid black toner. The specification does not describe a range of optical density fading and specifically does not describe a range of anything less than the single comparative value. The claims as presented permit any light fastness of less than 22.6 %, such as 22.5 %, 15 %, 10 %, 5 % and zero %, but the specification does not describe these values or any range at all that encompasses them.

The specification also does not describe pending claim 12's range of optical density fading of from 10.3 % to less than 22.6 % within the meaning of section 112, first paragraph. The remarks above concerning the lack of § 112, first paragraph, written description for a range of optical density fading are similarly applicable because the specification only discloses a liquid toner with a light fastness of 10.3 %. The specification does not disclose any range for optical density fading and there is no basis for a range of values from the single disclosed optical density fading to less than a single comparative. No range of values is disclosed in the specification as the invention.

The specification also does not describe pending claim 13's range of Chroma for a liquid black toner of less than 3.45 within the meaning of section 112, first paragraph. The specification provides no description of a numeric value(s) or range(s) of chroma change for the liquid black toner other than +0.01. Although the specification does teach that a comparative toner has a change in chroma of +3.45, this does not disclose that the range of all values less than +3.45 is the invention.

Claims 1-14, 16-18, and 20 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for liquid toners having a change in optical density of 10.3 % after about 216 hours of exposure, does not reasonably provide enablement for all black liquid toners having a change in optical density of as little as zero or other small values for all exposures of about 216 hours. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

As noted above, the specification discloses a single inventive black liquid toner composition having a change in optical density of 10.3 % after about 216 hours of exposure. The instant claims include all black liquid toners that have an optical density fading of less than 22.6% when exposed to a light having a spectrum of wavelengths from about 270 to about 800 nanometers for a period of time of about 216 hours. The instant specification on page 4 discloses a single liquid toner composition having optical density characteristics desired. The specification teaches that the effects of the invention are achieved by combining a carbon black colorant with other colorants, such as a blue or violet pigment (spec. p. 3, l. 4-9) and the specification discloses specific blue and violet pigments as effective (spec. p. 3, l. 30-33). A specific concentrate is disclosed on specification page 4 having a specific tradename blue phthalocyanine and a specific tradename violet dioxazine pigment. This single inventive composition gives the results presented on specification page 5. On this same page the specification states that the results of the invention are "not completely understood" and then the specification theorizes that the results are an "interaction between the polymer and pigments in the inventive toner particles". On specification page 6 the manner of determining optical density, colorimetry, and chroma values is disclosed. The specification then describes various carbon black colorants that are effective and discloses specific blue and violet or purple

pigments than may be used. On page 7 the specification states polymers, ionomers, and copolymers other than the single exemplified Nucrel 699 may be used. General conventional preparation techniques are disclosed as effective for making the liquid toners (spec. p. 7) and other general classes of pigments are generally disclosed.

Also on specification page 7 the inventors note, "It should be understood that not all of these pigments are equally colorfast and that the choice of which pigments to use will be based on the color of the carbon black, the available colors of the pigments, the relative lightfastness of the pigments, the effect of the polymer on the actual colors achieved and the degree of neutrality to be achieved. Using three, four or more pigments allows for a greater degree of flexibility in producing a lightfast, neutral black toner."

The limited disclosure of a single inventive composition to obtain a single optical density fading value with general disclosures of other components that might work does not provide sufficient teaching of how to obtain an optical density fading for a reasonable portion of the claimed range of less than 22.6 %. More the artisan contemplating the claims would have insufficient guidance of how to obtain optical density fading values of, for example, 1%, 5%, or 10%, and of what types of experimentation would produce these values. The specification recognizes that interaction of all the toner components (carbon black, additional pigments, resins, etc.) impacts the optical density fading, but fails to give guidance of how to select these components where specific optical density fading values – other than about 10.3 % - are desired. Although the level of skill is high in this art, the level of experimentation without necessary guidance places an undue burden on the public.

#### **(10) Response to Argument**

In the traversal of the section 112 written description rejection, appellant takes the position that the Office has failed to properly determine the teachings reasonably conveyed by the application. The Examiner disagrees with this statement for the reasons given above and the reasons that follow. However, there are some areas where the Examiner and Appellant are in agreement. Appellant states, "Page 3 of the (Final) Office Action alleges that 10.3% fading, the result of one example, constitutes the only numeric value for fading improvement supported by the specification." This statement is correct. Appellant also states, "The Office apparently takes the position, which Appellant traverses, that those of ordinary skill viewing the whole specification would find the inventor only had possession of 10.3% fading and no other numeric amount of fading." This statement is also correct.

The specification provides only a single numeric value for the inventive liquid toner's optical density fading on page 5, in the Table. A review of the specification will readily show there is no other inventive numeric value nor any range of values for the liquid toner's optical density fading. The Examiner urges the BPAI to review the Brief in detail and note that Appellant has not pointed to any other passage in the specification where a numeric value or range of values for optical density fading are shown to be applicable to the invention's liquid toner.

In response to the rejection, Appellant reviews the specification teaching of improvement in light fastness with reference to a discussion of the data for the single inventive liquid toner and the single comparative liquid toner on specification page 6 (Brief pp. 8 & 9). The specification states that light fastness is improved (e.g., spec. p. 4, l. 2) and one could fairly conclude that improvements in optical density fading in addition to the exemplified value for the single inventive example could be obtained (see Brief p. 9). However, these inferences do not

provide a written description for any numerical range and particularly not a range from 0% optical density fading to less than 22.6%. The specification does not disclose an optical density fading numeric range of less than the single comparative example.

The Brief on page 9 could be interpreted to suggest that the discussion of specification page 6, lines 1-19 is with respect to all liquid toners, but a review of the paragraph spanning lines 10-16 on specification page 6 shows that the discussion is with respect to the single inventive liquid toner and the single comparative liquid toner whose numeric values are discussed on specification page 5.

Throughout the Brief, Appellant appears to be taking the position that a general discussion of an improvement is a section 112, first paragraph, written description of all numeric values greater than a single comparative example. The Examiner disagrees. The general disclosure of an improvement and one comparative liquid toner's optical density fading is a description of just that and nothing more. It does not provide a written description of any value – or the claimed numeric range - of optical density fading over that of this single comparative. The fact that the specification discloses other materials that can be used to obtain a black liquid toner according to the invention does not provide a description of the claimed numeric range of optical density fading (see Brief pp. 10 & 11). The Examiner specifically challenges Appellant's assertion that, "No question exists among those of ordinary skill that the present specification discloses an improvement in black tone with respect to the prior art" (Brief p. 10). This assertion is without any support, evidence, or basis. It is evident that the specification does not describe a light fastness value of 22.6 % for the inventive black liquid toner. It is also evident that the specification does disclose a light fastness value of 10.3 % for the inventive black liquid toner. Beyond that, the specification provides no description of a numeric value(s) or range(s) of light fastness for the black toner. The specification teaches that selection of pigment can give

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improved fade resistance as noted by Appellant (spec. p. 6, l. 20-25), but this does not disclose any numeric value(s) or range(s) of light fastness for the inventive toner. Nothing in the traversal shows the Examiner's rejection under section 112, first paragraph, to be reversible error.

With respect to Appellant's traversal of claim 12's range of optical density fading of from 10.3 % to less than 22.6 %, the remarks above concerning the lack of § 112, first paragraph, written description for a range of optical density fading are also applicable. Contrary to Appellant's assertion, the specification does not disclose a numerical range for optical density fading. Consequently, Appellant do not have basis in the specification for claiming a narrower range. The discussion in MPEP 2163.05 (III) is not applicable to the instant fact situation because the underlying case law *In re Wertheim*, 191 USPQ 90, had a numerical range disclosed. No such range is present in the instant specification.

With respect to claim 13, the rationale for the Examiner's holding of a lack of written description for the claimed optical density fading numeric range is similarly applicable to the claimed chroma range. The specification provides no description of a numeric value(s) or range(s) of chroma change for the black toner other than +0.01. Although the specification does teach that a comparative toner has a change in chroma of +3.45, this does not disclose that all values less than +3.45 are the invention. Appellant's remarks concerning the disclosures on specification page 6 and the Table on 5 have been considered, as have the underlying disclosures, but the disclosure of a single numeric value in a single comparative example and the desire to improve over this value does not provide basis for the claimed numeric range which is all chroma values less than +3.45.

In the traversal of the section 112, enablement rejection, Appellant reviews various Court decisions relating to the enablement issue (see Brief pp. 13-15). Appellant specifically addresses the facts of the instant claims noting that predictability is not of concern for the toner particles of claim 1 (Brief p. 15, top).

Various lightfast pigment groups are disclosed on specification page 6, line 33 to page 7, line 4 and on page 7 at lines 15-23. These pigments are disclosed to balance the color hue of the pigment, but color hue and color fastness are distinct properties. There is no indication that any or even a reasonable number of the compounds that might provide the requisite color hue would also be color fast to give the claimed range of optical density fading and chroma.

This position is supported because the compounds in the relied upon passages include a very broad group of compounds. For example, on 28 July 2009 the Examiner performed a Chemical Abstracts Registry file search on three of classes of compounds relied upon by Appellant. The information from that search is as follows:

```
=> s phthalocyanine
L1      18531 PHTHALOCYANINE

=> s dioxazine
L2      895 DIOXAZINE

=> s perylene
L3      6567 PERYLENE
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As is apparent, just experimenting with phthalocyanines, dioxazines, and perlenes would require knowledge of and experimenting with nearly 26,000 different compounds alone and in combinations to give the desired range of optical density fading. This level of experimentation cannot be considered reasonable, particularly given the little effective guidance in the specification. Appellant takes the position on Brief p. 17 that the numerous search hits do not refer to unique pigments. The BPAI is kindly reminded that the search was done in the

registry file of Chemical Abstracts Service where each hit represents a distinct, separately registered compound. Thus, Appellant's remarks are not factually correct.

Predictability is a concern where the claims would require such substantial experimentation because reduced predictability requires more experimentation by the Appellant to obtain the desired optical density fading. Appellant's remarks are, therefore, not persuasive to overcome the rejection because the pigment groups includes thousands of different compounds as seen in the information from Chemical Abstracts. Also a review of the specification shows that the specific color fast pigments disclosed are specific blue and purple pigments. The claims, however, are not limited to these pigments. The claims permit any pigment.

The specification also identifies "the choice of which pigments to use will be based on the color of the carbon black, the available colors of the pigments, the relative lightfastness of the pigments, the effect of the polymer on the actual colors achieved and the degree of neutrality to be achieved." Considering all of these factors and experimenting with the myriad of available compounds (pigments, carbon black, resins, etc.) the experimentation goes far beyond a reasonable level of experimentation to obtain liquid black toners having optical density fading and croma within a reasonable portion of claims' scopes.

Appellant take the position in the response that the specification provides sufficient guidance to obtain the desired light fastness and change in chroma because the present specification enumerate specific light fast carbon black and fade resistant 'balancing' pigments that may be combined and evaluated for fade resistance. Blue, violet, yellow, orange, red, brown, green, etc. light fast pigments are named.

A review of the specification shows that the pigments disclosed are specific blue and purple pigments. The claims, however, are not limited to these pigments. The claims also

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permit any pigment. Note Diamond, specifically at page 245, the Table of "Typical Pigments for Liquid Electrostatic Toners". As seen here, "typical pigments" include over 50 pigments with colors ranging from yellow, orange, red, blue, green, violet and black. The instant claims include any of these pigments, in any combination, in any amounts, to give the desired light fastness and change in chroma. Just experimenting with 50 of these pigments would give  $3 \times 10^{64}$  different combinations to consider (i.e., 50 factorial). Although a large amount of experimentation is permitted if the experimentation is routine, the sheer magnitude of the experimentation is not reasonable even if routine to obtain liquid black toners having optical fading density and chroma throughout the claimed numerical ranges.

Undue experimentation is required to practice the claimed throughout a reasonable amount of the claimed scope of protection.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Christopher RoDee/

Primary Examiner, Art Unit 1795

27 January 2010

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